Author Index

Aiba, S., 269
Alvarez, J., 149
Ando, T., 103
Armiger, W. B., 215

Beaverstock, M. C., 241
Blachere, H. T., 205
Bošnjak, M., 155
Boulton, R., 167
Bourne, J. R., 359
Boyle, T. J., 349

Cadman, T. W., 25
Cheruy, A., 303
Cooney, C. L., 1; 13; 95
Cordonnier, M., 227
Creagan, C. C., 335

Dobry, D. D., 39
Drakeford, J., 231
Dunn, I. J., 359
Durand, A., 303

Endo, I., 321
Erickson, L. E., 49

Gerhardt, P., 137
Gray, P. P., 125

Halme, A., 369
Hatch, R. T., 25
Hennigan, P. J., 257
Hewetson, J. W., 125

Inoue, I., 321
Ishikawa, T., 103
Ishikawa, Y., 103

Jefferis III, R. P., 231
Joergensen, B. B., 85
Johanides, V., 155
Jong, T. H., 125
Jost, J. L., 39

Kamiyama, N., 103
Kernevez, J. P., 227
Kitabata, T., 283
Kitsunai, T., 103
Kjaergaard, L., 85
Klein, S. S., 231
Kobayashi, T., 73
Kryze, J., 227

Lebeault, J. M., 227
Lim, H. C., 257; 335
Lundell, R., 381

Miwa, K., 103
Mohler, R. D., 257; 335
Moo-Young, M., 179
Moran, D. M., 215
Moreira, A. R., 179
Mori, H., 73

Nagamune, T., 321

Ohashi, M., 103
Oikawa, Y., 103

Peringer, P., 205

Ricaño, J., 149

Schultz, J. S., 65
Shibata, T., 103
Shimizu, S., 73
Shiota, M., 283
Shioya, S., 283
Shoda, M., 103
Sims, G., 65
Spruytenburg, R., 359
Stieber, R. W., 137
Swartz, J. R., 95

Takamatsu, T., 283
Topolovec, V., 155
Trearchis, G. P., 241
Tsao, G. T., 257

Undén, Å., 61

Van Dedem, G., 179

Wang, D. I. C., 13
Wang, H. Y., 13
Watabe, T., 103
Watanabe, Y., 103
Weigand, W. A., 257; 335
Wilder, C., 25
Yano, T., 73
Zabriskie, D. W., 117

Subject Index

Activity, 283
Affinity sensors, 65
Ammonium lactate, 137
Analyses, 61
ATP, 179
Available electron balance, 49

Bakers' yeast, 205, 359
Biomass, estimation, 61, 117
  high-density, 65
  measurement, 117
  productivity, 335

Carbon balance, 49
Carbon dioxide production, 39
Cell age distribution, 369
Cell population balance, 283
Cellulases, 179
Computer-aided fermentor, 269
Computer-coupled system design, 215
  function, 215
  specification, 215
Computer interfacing, 215
Control, 95, 227, 349, 359
  adaptive, 1
  computer, 1, 13, 25, 39, 257, 269, 335, 369, 381
  data logging, 227
  data treatment, 227
  feedback, 1
  feed forward, 1
  multivariable, 283
  noninteracting, 283
  on-line computer, 149
  optimal, 205
  PI, 283
  process, 39, 269
  rate, 167
  temperature, 167

Data, analysis, 49
  consistency, 49
  recording, 39
Determination of the culture metabolic activity, 117
Dialysis, 137

Diauxic growth, 179
Dissolved oxygen sensor, 103
DO-stat system, 65
Dual substrate, 167
Dummy state variable, 283
Dynamic programming, 149

Economics, 1
Erythromycin biosynthesis, 303
Ethanol-assimilating yeast, 283
Enzyme induction, 179
  regulation, 179

Feed rates, 61
Fermentation, 137, 335
  aerobic, 359
  alcoholic, 167, 321
  bakers' yeast, 13
  batch, 167, 257, 321
  continuous, 257
  control, 231, 241
  dissolved oxygen, 39
  fed-batch, 257, 335, 349
  monitoring, 61
  optimal, 349
  optimization, 269
  penicillin, 1
  repeated fed-batch, 205, 335
Fermentation modeling, 61, 125, 369
Fermentation models, 179
ff gas, 61
Fitting theory to experiment, 155
Fluorescent antibodies, 25
Fluorescence techniques, 117

Gas analysis, 13
Gas balances, 359
Glucose effect, 359
Growth estimation, 369

Identification, 149
Immobilized penicillinase, 125
Indirect measurement, 61, 95
Influence of efficiency, 349
Inhibition, 167
Instrumentation review, 61

Intracellular monitoring, 117

Kinetics, 137

Lactobacillus, 137
Laser flow microphotometer, 25
Linear model, 349
Lipase, 179

Maintenance, 49
Material balancing, 1, 13
Mathematical model, 155, 283
Maximum principle, 335
Membranes, 137
Metabolite repression, 179
Metabolites, 65
Methanol concentration, 65, 149
Microbial population dynamics, 25
Microcomputer, system homogeneity, 227
  reproducibility, 227
Mixed cultures, 25
Model, 167
  identification, 269
Modeling, 137
  batch-culture, 179
  continuous-culture, 179
  tubular fermentor, 179
Monitoring, fermentation, 61

NADH, 117
Nonlinear programming statistical tests, 149

Objectives, pilot-plant system, 215
  plant-scale system, 215
On-line analysis, 39
Optimization, 1, 257, 303, 335
Oxygen uptake, 39

Parameter estimation, 269
Penicillin fermentation, 1
Penicillin-sensing electrode, 125
Permeases, 179
PI control, 283
Process control, 39, 269
Process kinetics, 155
Prognosis, 155

Quasi-steady state, 349

Redox potential, 85
Respiratory quotient, 13, 359

Sensors, 103
Silicone tubing, 65
Simulation, 155
Single-board microcomputer, 231
Single-cell protein, 335, 369
State observer, 283
State space, 349
Step disturbance, 283
Supervisory digital control, 257
  digital panel meter, 257
System hardware configuration, 215
  software configuration, 215
Systems engineering, 349

Three-dimensional growth concept, 155
Time optimal, 335
Tubing sensor, 65

Ultrafiltrate, 137

Viability, 167

Whey, 137
Wine, 167

Yeast, 149
Yield, 49